The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JOSEPH P. ZIGADLO, CARL L. HOLDEN,
MARK E. SCHRADER, and RICHARD M. VOGEL

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Appeal No. 1998-1905
Application No. 08/362,725

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ON BRIEF

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Before HAIRSTON, JERRY SMITH, and BLANKENSHIP, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-13, which are all the claims in the application.

We reverse.

BACKGROUND

The invention is directed to an electronic color infrared camera. Claim 1 is reproduced below.

1. An infrared digital electronic camera comprising:

a. a solid state color image sensor having an array of image sensing elements and an array of color filter elements arranged over said image sensing elements for producing a color image signal, said color filter elements including infrared color filter elements that block blue light and pass infrared light; and

b. a signal processing circuit for processing said color image signals[1] from said image sensor to produce a false color image signal.

The examiner relies on the following references:

Dillon et al. (Dillon)	4,016,597	Apr. 5, 1977
Rantasuo et al. (Rantasuo)	5,557,326	Sep. 17,1996 (effective filing date Jul. 18, 1994)

Claims 1-13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dillon and Rantasuo.

We refer to the Final Rejection (Paper No. 8) and the Examiner's Answer (Paper No. 10) for a statement of the examiner's position and to the Appeal Brief (Paper No. 9) for appellants' position with respect to the claims which stand rejected.

[1] We note an apparent informality: a lack of proper antecedent in the claim for "said color image signals." The recitation should be amended to recite a singular --signal--.

OPINION

In the statement of the rejection, the examiner points to Figure 2 of Dillon as disclosing an infrared digital electronic camera which includes an image sensing array unit 6, with a "mosaic color filter array" (12', Figure 4A), a signal processor (Fig. 2), and an IR filter 24 (Fig. 2). (See Answer, pages 3-4.) Dillon is not relied on as teaching a filter that blocks blue light and passes infrared light, nor a processing circuit for processing the image signal to produce a false color image signal. (See id. at 4.) Rantasuo is relied on as providing the teachings that are missing in Dillon. (See id.)

Appellants argue in the Brief, inter alia, that the rejection is based on impermissible hindsight, in that there was no motivation in the prior art for the combination proposed. Our review of the references leads us to conclude that appellants' assessment is correct.

Dillon discloses a color video camera which uses infrared light to supplement the image sensors when visible light is at low levels. As shown in Figure 2, at low light levels infrared filter 24 is removed from the optical path, allowing visible and infrared radiation to fall on imaging apparatus 6. As shown in Figure 4A, a filter mosaic 12' cooperates with the imaging array. The filter mosaic 12' has specific filtering properties in that each element of the mosaic blocks two of the three preselected primary colors (red, green, and blue), but each element also transmits infrared. The primary colors are thus supplemented by infrared at low light levels. In the preferred embodiment, the video camera is switched to monochrome at the low light levels so at to avoid unnatural color.

Rantasuo discloses a “false color” video camera. As shown in Figure 3, there are three detector arrays 2, 3, 4. Paired filters (7, 15; 8, 16; and 9, 17) in the optical paths filter the ambient light composed of the primary colors of blue, green, and red, along with near infrared (“ir”), so that the light falling on arrays 2, 3, and 4 is near infrared, green, and red, respectively. Decoder 18 rearranges the order of the signals such that green, red, and near infrared correspond to video outputs blue, green, and red, respectively.

In light of these disclosures, we agree with appellants that the motivation to make the proposed modifications to Dillon does not arise from the prior art, as represented by Dillon and Rantasuo. The thrust of the rejection as stated by the examiner is to modify elements disclosed in the video camera of Dillon such that Dillon’s apparatus becomes a “false color image” camera. However, Dillon already provides an apparatus that utilizes infrared light in combination with the visible green, red, and blue portion of the spectrum. Modifying the Dillon camera to meet the terms of the instant claims would not be an improvement of the Dillon camera, but would change the camera into something else -- the type of camera disclosed by Rantasuo. We do not find suggestion in the prior art to do so.

On page 5 of the Answer, the examiner points to column 2, lines 43-50 of Rantasuo as providing the motivation for the proposed combination. We consider that section of the reference as describing advantages of the invention disclosed by Rantasuo. We do not find anything in the text that would have led the artisan to modify the camera of Dillon as proposed by the rejection.

The rejection is also deficient in apparently stopping at the requirements of instant claim 1. Independent claims 3 and 9 set forth additional embodiments of the invention, which are not addressed in the statement of the rejection. Claim 9 is mentioned in the answer in the paragraph bridging pages 7 and 8. However, there is no application of the teachings of the references to the specific requirements of the claim.

We therefore cannot sustain the rejection of claims 1-13 under 35 U.S.C. § 103 as being unpatentable over Dillon and Rantasuo. We add that, in our view, Rantasuo appears to be the more pertinent of the references, at least with respect to instant claim 1. Rantasuo discloses an infrared[2] digital electronic camera comprising a solid state color image sensor 2 (Figure 3) having an array of image sensing elements and an array of color filter elements 7, 15 arranged over the image sensing elements for producing a color image signal. Color filter elements 7, 15, include an infrared color filter element 15 that blocks blue light and passes infrared light. Decoder 18 is a signal processing circuit for processing a color image signal from image sensor 2 to produce a false color image signal. Appellants contend that "the only processing that is done by Rantasuo...is to change the order of the signals in the output channels." (Brief, page 5.) While we agree with appellants that such processing is not suitable for use in the Dillon system, changing

[2] Although Rantasuo describes selectively blocking or passing "near infrared" radiation, appellants do not draw any distinction between the "near infrared" and the "infrared light" set forth in the claims. See Brief, page 5 ("Since the filter structure disclosed by Rantasuo...separates the light reaching the respective sensor arrays into infrared, green and red....").

the order of the signals is sufficient to meet the broad requirements of the "signal processing circuit" of instant claim 1.

Thus, we find the only difference between instant claim 1 and the disclosure of Rantasuo to be that Rantasuo discloses a single infrared color filter element that performs the associated function set forth in claim 1, and which is positioned over the image sensing elements of the solid state image sensor, rather than a plurality of such elements. Absent suggestion in either of Rantasuo or Dillon to make such a modification, however, the references before us do not establish a prima facie case of obviousness for the subject matter as a whole of instant claim 1.

CONCLUSION

The rejection of claims 1-13 is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
JERRY SMITH Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
HOWARD B. BLANKENSHIP Administrative Patent Judge	)

PATENT LEGAL STAFF
EASTMAN KODAK COMPANY
343 STATE STREET
ROCHESTER , NY 14650-2201